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THE DEVELOPMENT OF A BELGIAN ACCOUNTING CODE DURING THE FIRST HALF OF THE 20TH CENTURY

Abstract: Continental European countries are familiar with standardized charts of accounts. Practices in these countries have been quite diverging however, ranging from the voluntary adoption of schemes developed by professionals or associations to state-imposed charts. In the development of these schemes, several Belgian accounting scholars have played an important role, particularly from the end of the 19th century to the beginning of the 20th century. This paper links the charts proposed in Belgium with attempts to develop unified accounting and costing methods and efforts to introduce principles of scientific management around the end of the Second World War. It also seeks to explain why the introduction of decimalized charts took longer in Belgium than other countries such as France.

INTRODUCTION

The observation of significant international differences in financial accounting practices has triggered a large body of research and different types of classifications of accounting systems across countries [for a summary see Nobes and Parker, 2002]. These classifications of accounting systems tend to place those of Belgium and France in the same category. Although there are many similarities between the accounting frameworks of both countries, the historical development of accounting was rather different. Currently, both Belgium and France have an accounting plan. The French 'plan comptable' was introduced after the Second World War and the state was strongly involved in its implementation [Mommen, 1957, CNC, 1957]. It used a decimal classification of the accounts with up to five-digit codes. Development in Belgium was different: a three-digit decimal chart of accounts only became compulsory in 1983, following

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the implementation of the Fourth EC Directive.[1] On the following pages the causes of this divergence in development are discussed. It will be hypothesized that the dominance of the Société Générale de Belgique, the major Belgian holding company, and its preference for the Godefroid [1864] classification of accounts, explains the reluctance to arrive at an officially imposed chart of accounts.

The second half of the 19th century and the 20th century were periods of intensive thinking in Belgium about ways to organize bookkeeping and financial reporting [Vlaemminck, 1956]. Before 1983 there were many proposals from accounting professionals and academics, as well as private initiatives from industrial bodies. This paper examines some of these initiatives.

The French 'plan comptable' is a typical example of accounting charts as they are currently applied in continental Europe [Roberts, 1994]. It is a balance sheet oriented code because many of its classes of accounts relate to that financial statement. It is also an example of a dualist approach to accounting, because accounting for internal transactions, such as the calculation of unit cost, is not necessarily included in the system which culminates in the financial statements. Most of the initiatives that were discussed in Belgium had a monistic perspective and focused on cost calculations. A second hypothesis developed in this paper is that the early attempts to harmonize Belgian accounting codes were driven by a desire to unify cost calculation practices, rather than financial statements.

Literature Review on the Development of Charts of Accounts: The development of charts of accounts was widely discussed in Belgium during the 1950s. This reflected similar interest in other European countries. The Anglo-American world appears to have been less engaged with this discourse [Mommen, 1957]. Although the number of academic articles devoted to the development of accounting charts is generally limited, it is the German accounting plans and the French 'plan comptable' which have

[1] In a few industries there were already mandatory provisions with respect to charts of accounts in Belgium in the 1960s. The best known example of such regulations is a ministerial decree of 22 May 1965 which imposed uniform accounting practices on the colliery industry, including a chart of accounts that also served for cost accounting purposes (see also Olivier, 1979). This regulation is not the focus of our analysis because it was driven by European interventions in the coal industry. A similar situation existed in electricity production. Except for these few examples, the state seems to have played no role before the 1970s.

received most attention [e.g., Forrester, 1977; Standish, 1990; Bechtel, 1995]. A series of articles in *The European Accounting Review* broadened this focus to other countries such as Spain [Chauveau, 1995], and Russia and Romania [Richard, 1995b].

Summarizing this literature, Richard distinguished three phases in the structuring of accounts [1995a]. The first phase is 'formal monism' during which financial and management accounting are integrated in one accounting system. This is followed by a transitional phase. The focus of 'formal monism' was accounting unity, excluding all types of partitioning within an accounting system. Then follows a period of "exclusive recourse to the principle of formal dualism" [Richard, 1995a: 89]. Such systems were characterized by the creation of different subsystems within the accounting system, giving the same results in different ways and linking subsystems to each other using what were called 'mirror accounts'. Typically, one subsystem focused on the preparation of financial statements and another subsystem provided more detailed information that could be used for management purposes. Geertman [1949] uses the same terminology and refers to Löwenstein who apparently introduced these terms. In his discussion of the first phase in the structuring of accounts, Richard stressed the important role of Belgian accountants such as Godefroid and Blairon. Their contributions are discussed in the following paragraphs.

THE EMERGENCE OF CLASSIFICATION IN 'CHAPTERS'[2]

In the 19th and early 20th centuries, the legal requirements with respect to accounting and financial reporting to shareholders in Belgium were very limited. From 1872, the Commercial Law (Book 1, Title III, art. 16-19) prescribed that each merchant had to keep a journal, an inventory book and a book containing copies of all in and outgoing correspondence. Companies were subject to a number of additional requirements, listed in Book 1, Title IX of the Commercial Law. The board of directors had to present a balance sheet and a profit and loss statement to the general meeting of shareholders. The balance sheet had to report assets and liabilities separately. However, no specific format was prescribed. The law merely specified that a distinction

[2] The charts reproduced in this paper are reported on the 'articles' level, or, for the decimalised charts, on a two-digit level. The original charts generally were much more detailed, with for example, account numbers of up to four or five digits.

had to be made between fixed and current assets and between equity, bonds, guaranteed debts (such as those guaranteed by mortgages) and unguaranteed debts. Neither did the Commercial Law impose any format requirements or minimum content of the profit and loss account. It was further prescribed that these financial statements should include 'necessary depreciation', but again, the law did not include guidelines. Apart from these few rules, there were no other mandatory accounting requirements such as standards. Contemporary observers strongly criticized the insufficiency of these regulations, but without success. The statute was not fundamentally changed until 1975 [see for example, Van Ryn, 1954]. The absence of detailed regulations gave companies and accountants a significant degree of freedom in reporting practices. Consequently, different ways of reporting and of structuring accounting systems emerged.

The Ideas of H. Godefroid: As suggested earlier, an author who had a significant impact on the development of accounting codes in Belgium was H. Godefroid. Godefoid's *Cours de Comptabilité Pratique, Industrielle et Commerciale* was published in 1864. Godefroid began his book by stating that: "Of all the books on bookkeeping that have been published, and that are being published every year, there is not one that discusses a complete accounting system as it is understood nowadays in the industrial world" [1864, p. 5].

This orientation towards industry, as opposed to commerce, turned out to be a key factor in the development of the codes discussed in this paper. Because of the importance of manufacturing and extractive industries in Belgium and elsewhere, Godefroid sought to address the lack of appropriate textbooks on accounting. His chart of accounts, reproduced in Table 1 below, was designed for the traditional heavy industries of the period, collieries and iron and steel plants. Godefroid organized the accounts in his system in chapters *('chapitres')* and articles *('articles')*. He explained, "It is certain that the division and categorization of the accounts in titles, in chapters, in articles, is the clearest method, the simplest, the most natural, that one could adopt to give anyone access to the dark catacombs of the accounting entries" [Godefroid, 1864, p. 65].

A structure based on a division in chapters, with further subdivisions in articles, seems to have been an innovation in industrial and commercial accounting. Mommen [1957] considered the structure to be a significant improvement on past practices. However, this vocabulary was already used in the public

sector in France in relation to the registration of receipts and payments. Lemarchand [1999] states that in 18th century France public sector accounting imported the account concept from commercial accounting as a permanent unit of classification, mainly oriented towards controlling cash flows between the state and those who financed it. Although the history of the public sector in Belgium has never been studied from this perspective, the common language and the close connections between France and Belgium make it probable that this terminology was also known in Belgium. This specific vocabulary might have been transferred from state organizations to the private sector in Belgium during the 19th century.

In Godefroid's scheme, the initial chapter included the 'first establishment' accounts (essentially, types of fixed assets). A chapter that reported general expenses followed. The third chapter was called 'General stores' and included, for example, coal, coke and metals. The fourth chapter allowed separate accounting for divisions. The fifth 'Particular accounts' chapter reported equity, various debtors and profits and losses. The sixth chapter included cash and the investment portfolio. This structure is illustrated in Table 1.

Godefroid strongly criticized the fact that existing textbooks emphasized accounting frameworks which had been developed for commercial, as opposed to industrial activities. Consequently, these textbooks did not discuss how to account for activities conducted by different divisions, an essential characteristic of larger industrial companies:

> We thought it useful to prepare a simplified accounting course, based on practice and experience, taking as our perspective accounting for a large company that includes different types of industries, such as: iron production, machine construction, coal and minerals exploitation and glass production. By bringing these different industries in one centralizing system based on the same principle, it will become easy to understand the whole mechanism of the accounting entries [Godefroid, 1864, p. 8].

Existing textbooks also failed to offer consistent ways of dealing with different types of expenses incurred by industrial firms. One of Godefroid's objectives was to propose a unified and rational solution to this problem:

> It is necessary for the manager to be able to trace and track all types of production. In this way, one can be

TABLE 1

Chart of Accounts in Godefroid, 1864

CHAPTER 1. First establishment

Art. 1 Buildings and real estate
Art. 2 Equipment
Art. 3 Furniture

Real estate divisions

Art. 1 Collieries
Art. 2 Mines
Art. 3 Blast furnaces
Art. 4 Rolling mills
Art. 5 Constructions workshops
Art. 6 Glassworks

Preparatory works

Art. 1 Collieries
Art. 2 Mines
Art. 3 Blast furnaces
Art. 4 Rolling mills
Art. 5 Constructions workshops
Art. 6 Glassworks

CHAPTER 2. General expenses

Art. 1 Discounts and interests
Art. 2 Interest on working capital
Art. 3 Salaries
Art. 4 Office supplies
Art. 5 Travel expenses and commissions
Art. 6 Taxes and patents
Art. 7 Cars
Art. 8 Insurance
Art. 9 Petty costs
Art. 10 Various expenses
Art. 11 Balance via particular accounts

CHAPTER 3. General stores

Art. 1 Coal
Art. 2 Mines
Art. 3 Coke
Art. 4 Castine
Art. 5 Pig iron
Art. 6 Cast iron
Art. 7 Iron
Art. 8 Forged iron
Art. 9 Boilers
Art. 10 Machines
Art. 11 Mechanical objects
Art. 12 Consumables
Art. 13 Transfer from previous year

CHAPTER 4. Divisional accounting

Art. 1 Collieries
Art. 2 Mines
Art. 3 Blast furnaces
Art. 4 Rolling mills
Art. 5 Constructions workshops
Art. 6 Glassworks
Art. 7 Balance via particular accounts

CHAPTER 5. Particular accounts

Art. 1 Equity
Art. 2 Shares
Art. 3 Reserves
Art. 4 Various debtors
Art. 5 Profit and loss
Art. 6 Divisional profits

CHAPTER 6. Financial service

Art. 1 Cash
Art. 2 Portfolio

> certain of all items that are part of the unit cost ('prix de revient'), the angular stone of the building . . . to each finished product should be charged related labor costs, the value of raw materials used in production, consumables, direct and indirect expenses, in other words, maintenance expenses for buildings, that have to be depreciated, wear and tear of equipment, salaries, etc [Godefroid, 1864, p. 9].

As Godefroid's chart was oriented towards industrial activities one of its main objectives was to produce reliable cost calculations. It did not focus on the preparation of balance sheets: the balance sheet accounts were mainly found in a few chapters such as chapter 5 'Comptes particuliers' which included accounts such as capital, reserves and debtors. Chapter 2 broke down overhead expenses, chapter 4 also related to expenses, chapter 1 included 'preparatory works' that were normally charged to the profit and loss account, and the fixed and current asset accounts in chapter 1 and 3 were not reported in such detail in the balance sheet (inventories and divisionary fixed assets). The structure of chapters 1, 3 and 4 further shows that this chart was developed for large heavy industry companies.

The Role of the Société Générale de Belgique: Mommen [1957] concluded that Godefroid's chart helped unify accounting systems in different companies. However, Mommen believed that this unification was only partial because: the chart was not based on a 'general logic of economic flows', the structure of the chapters was developed for one type of company only, and the classification could not be used as a rational basis for the balance sheet or for accounting education. However, the chart did attract attention in the steel industry. The Société Générale de Belgique, heavily involved in steel production, choose to further develop the Godefroid scheme and use it as the basis for the classification of the accounts it imposed on the industrial companies under its control.

Godefroid's ideas remained influential in Belgium via the chart of accounts developed by the Société Générale. The Société Générale de Belgique, originally founded in 1822 as 'Société Générale des Pays-Bas pour favoriser l'industrie nationale', was the main Belgian holding company of its day [Crombois, 1994; Watelet, 1993; Laureyssens, 1986, 1989; Bonin, 1988; Van Der Wee, 1982; Janssens, 1985]. Around 1837, it controlled approximately 25% of Belgian heavy industry, mainly colliery companies, furnaces and steel and iron factories.

Its influence increased through the 19th century and around the mid-20th century it had controlling interests in Belgian financial institutions, the production of coal, iron and steel, metalworks, non-ferrous metals, electricity, transport, glassworks, the building industry, chemicals, textiles, paper, as well as about 70% of the economy of Congo [Joye, 1964]. Coalmining was one of the major industries for the Société Générale and this explains why the accounting rules it developed were geared towards colliery companies. Eventually, the scheme was also used in collieries not controlled by the Société Générale and in other industries [NCAB, 1964, De Beelde, 1995].

The Société Générale chart used account classes (called 'comptes généraux' or 'chapitres') and accounts ('articles'). It is illustrated in Table 2. For all account classes and accounts the Société Générale provided a description of contents, often with the name of other accounts to be used jointly when registering an accounting entry.

The affinity with Godefroid's scheme is obvious. The chart did not refer to 'classes of accounts' but to 'general accounts'. It was not described as a 'plan' but was referred to as the 'rules' of the Société Générale (*règles de la Société Générale*). The chart still incorporated many expense accounts, which were often balanced at the end of each accounting period, generally twice a month. Examples are the general accounts, 'travaux préparatoires' (preparatory works), 'frais d'exhaure' (drainage expenses), 'frais d'extraction' (extraction expenses) and 'transports à la surface' (above ground transport). Generally these accounts were debited for all related expenses and credited at the end of the period through the coal account. Consequently, the coal account registered, on its debit side, production expenses and, in a later phase, also the general expenses and selling expenses. Proceeds from sales were recorded on the credit side. Taking account of inventory movements, it was possible to calculate profit and to transfer this to the profit and loss account. Archival evidence shows that actual practice was more complex and divergent [De Beelde, 1995].

In addition to the determination of profit, this system allowed a calculation of unit cost within the traditional accounting system. In this way it comprised an integrated accounting system or an example of 'formal monism' [Richard, 1995a]. Again, archival evidence for the coalmining industry shows a more complex situation in practice. Even in the firms that used the Société Générale system, information in the cost sheets was more detailed than the data found in general ledgers or other

TABLE 2

Chart of Accounts of the Société Générale

CHAPTER 1. First establishment Art. 1 Concessions, land and buildings Art. 2 Office furniture Art. 3 Service equipment Art. 4 Plants Art. 5 Railway network Art. 6 Electric installations Art. 7 Drainage pits Art. 8 Extraction and ventilation pits Art. 9 Coal treatment installations Art. 10 Cokes factory Art. 11 Various installations	CHAPTER 7. Coal
CHAPTER 2. Preparatory works	CHAPTER 8. Stores (Warehouse) Oil and greases Iron and metals Wood Cords Other objects
CHAPTER 3. Drainage expenses	CHAPTER 9. General workplaces
CHAPTER 4. Extraction expenses	CHAPTER 10. Derivatives of coal Coke Deposits
CHAPTER 5. Surface transport	CHAPTER 11. Particular accounts Internal accounts Shares Bonds Legal reserve fund Additional reserves Provisions Profits and losses Work force Social charges . . . Third party accounts Debtors Creditors
CHAPTER 6. General Expenses Debit Art. 1 Interests and financial expenses Art. 2 Wages and salaries Art. 3 Selling expenses Art. 4 Offices supplies and petty costs Art. 5 Various consumption Art. 6 Taxes Art. 7 Rents and damages Art. 8 Maintenance of houses and buildings Art. 9 Maintenance of roads and streets Art. 10 Various expenses Credit Art. 1 Discounts and interests Art. 2 Fines Art. 3 Various rents Art. 4 Revenue from roads Art. 5 Various revenue	CHAPTER 12. Financial service Cash Notes on hand Securities owned Société Générale

preserved accounting books. In the La Haye Colliery, for example, there were monthly summaries of operations, detailing expenses for each pit, balance sheets and data on sales [AEL, Entreprises, Gosson, nr. 206]. The documents mention 'Transferred to accounting', suggesting that they were created in another department. After a series of mergers in 1930-1931, the company became the Gosson - La Haye - Horloz réunis Colliery and in the post-merger period the cost reports became even more detailed [AEL, Entreprises, Gosson, nrs. 299-300 and 641-675]. Some of these documents were titled 'report of the works director', clearly demonstrating the intervention of production rather than accounting staff. In some mines both the accounting departments and the production engineers calculated a (differing) cost price, whereas in other mines they apparently co-operated. This shows that even if we have formal monism, the actual calculation of unit cost could take place outside the accounting system.

Companies operating in the coal industry outside the direct control of the Société Générale generally also based their accounting code on this scheme, but often adapted it slightly [De Beelde, 1995]. Archival records show that some mines implemented a further analytical breakdown of some of the prescribed accounts. Although this accounting code was essentially designed for colliery companies the application of the chart was not resticted to concerns in this sector. It is reported to have been used in many other industries [Mayer, 1964] and the textbook by Ansotte and Defrise [1910] includes many examples of charts for other types of industries based on the colliery scheme. As late as 1964, the chart was still used by some companies in the Hainaut region of Belgium [NCAB, 1964].

THE DEVELOPMENT OF A DECIMAL CLASSIFICATION OF ACCOUNTS

Its adoption by the Société Générale encouraged a focus on the classification of accounts in 'chapters' in Belgium. During the 20th century, this was gradually replaced by a decimal classification of accounts.

The development of decimal classifications was widely discussed in the first half of the 20th century. This discourse can also be traced to the contribution of Melvin Dewey, who devised a general decimal classification scheme in 1873 and whose work was well known in Belgium. Dewey's scheme served as the basis for the universal bibliographic repertory that was to be devel-

oped by the International Institute for Bibliography *(Institut International de Bibliographie, IIB),* created in Brussels in 1895 by H. La Fontaine and P. Otlet. The IIB published a first version of *Manuel du répertoire bibliographique universel* in 1905. Between 1927 and 1929, a new version was published as the Universal Decimal Classification. The focus of Otlet and La Fontaine was not originally on accounting. Their objective as documentalists was much broader: "How best was order to be introduced into this proliferating, disorderly mass in such a way that progress in the world of learning could continue efficiently and effectively? … How could the international flow of information . . . become more open and more effective?" [Boyd Rayward, 1990, p. 2].

As part of their ambition to provide a structure that would allow the classification of all knowledge, Otlet and La Fontaine also turned to accounting. Paul Otlet, as Secretary-General of the IIB, published a short article in 1905 on accounting schemes [Otlet, 1905]. He worked with other accounting scholars in the Société Académique de Comptabilité de Belgique [Mommen, 1957]. On October 29, 1909 the Société Academique published a report which argued for a rational classification of accounts. Otlet's ambitions extended further. His greater object was the international harmonization of accounting codes. During the 2nd Accounting Congress in Charleroi in 1911, he founded – with 26 other persons – an International Accounting Association (Association Internationale de Comptabilité). The major aim of this association was the unification and internationalization of accounting systems and the adoption of a universal accounting scheme.

During the Accounting Congress of August 1910, held in Brussels during the International Exhibition, a decimal accounting code was presented but received a limited response. During the Fifth International Accounting Congress in Brussels, 1926, Otlet again presented a report on the future of accounting and its relation to the development of a system that would organize all knowledge of the world [Otlet, 1926]. In 1929, during a congress organized with the Association of Accountants in Catalonia, a decimal classification of accounts was also presented [Forrester, 1996]. Other conferences followed and discussions on accounting plans continued. Two major lines of thought emerged. Followers of Otlet argued for an international chart of accounts that would be linked to an overall record of the world. To them, the harmonization of accounting was a subset of a wider, more ambitious, objective. Others focused on accounting plans that were developed in national contexts, and

for which the objectives were more narrowly defined, referring to accounting principles as the basis for accounting plans. Otlet's ideas never gained widespread acceptance in Belgium and his significance gradually waned during the 1930s. He lost his influence on the *Institut International de Bibliographie* and a conflict with the Belgian government and the outbreak of the Second World War impacted negatively on the activities of the other organizations in which he was involved [Boyd Rayward, 1990]. Otlet died in 1944.

Hector Blairon's Chart: The 'accounting principles based' approach was to play an important role in the further evolution of the classification of accounts in Belgium. In 1926 the first edition of Hector Blairon's influential textbook, *Cours complet de comptabilité des industries manufacturières*, was published [Blairon, 1926]. Mommen [1957] shows that the first versions of his 'plan comptable' go back to 1912 and were based on 'chapitres décimalisés'. Table 3 shows the chart of accounts Blairon used in his classes in 1921, as published by Mommen in 1957 [see also Haulotte, s.d.].

Blairon's accounting code represented a major change although it originally kept the title of 'chapters' for the general accounts. Compared with the Société Générale scheme, the structure of Blairon's code is more systematic and closely equates to the structure of the balance sheet. The earlier chart places capital, other types of equity, bank accounts, all debtors/creditors, wages to be paid, and profits and losses together in one 'chapter', 'Comptes particuliers'. The older chart also used what was called a 'mixed coal account'. Although this account recorded movements in the coal inventory, the measurement of inventory was not its only objective. Because it valued coal leaving inventory at selling price, it was also used to determine the results for each accounting period. Contrary to this, Blairon separated, at the 'chapter' level, equity, fixed assets, available assets and realizable assets, and brought debtors and creditors together in a separate chapter. The structure of the expense accounts could also be considered more 'modern', because Blairon distinguished manufacturing costs, maintenance expenses, general overhead expenses and selling expenses. His system offered further clarity by having a separate chapter for allocation accounts (wages, depreciation, and general expenses) and by specifying separate accounts for unit cost calculation, the inventory account being focused only on the measurement of inventory.

TABLE 3

Chart of Accounts by H. Blairon, 1921

CHAPTER 0. Equity and provisions 00 Capital 01 Reserves 02 Various provisions 03 Depreciation 04 Financial revenues 05 Financial expenses 06 Various profits 07 Various losses 08 Monthly results 09 Annual results	CHAPTER 5. General administration and selling expenses 50 General administration expenses 51 Administrative expenses 52 Taxes and insurance 53 Selling and marketing expenses
CHAPTER 1. Fixed assets 10 Land 11 Buildings 12 Fixed equipment 13 Movable equipment 14 Small equipment 15 Furniture 16 Intangibles 17 Formation expenses	CHAPTER 6. General plant expenses and maintenance expenses 60 Factory expenses 61 Mainentance expenses
CHAPTER 2. Available assets 20 Cash 21 Notes to receive 22 Securities and participations 23 Postal account 24 Stamps 25 Cash transports	CHAPTER 7. Allocation accounts 70 Allocation of salaries 71 Allocation of transport 72 Allocation of depreciation 73 General expenses monthly allocated
CHAPTER 3. Warehouses 30 Raw materials 31 Consumables 31 Finished goods 31 Commercial sales warehouse	CHAPTER 8. Production accounts 80 Consumption of raw materials 81 Consumption of consumables 82 Direct wages 83 Part in general administration expenses 84 Factory expenses 85 Maintenance expenses 86 Allocation of depreciation
CHAPTER 4. Debtors and creditors 40 Debtors 41 Creditors 42 Banks 43 Sales agents 44 Salaries payable 45 Accounts shareholders 46 Taxes to be paid	CHAPTER 9. Sales accounts 90 Finished goods sales 91 Raw materials sales 92 Consumables sales 93 Commerical sales

The decimal classification of accounts was further developed in subsequent editions of Blairon's textbook. 'Account class' replaced the term 'chapter' and the number of accounts was further (and significantly) increased. Four classes of accounts included balance sheet-related accounts while the others formed the profit and loss account. The most developed versions of the code allowed a detailed and separate registration of all types of expenses at individual product level. It is obvious that this code made possible a detailed cost calculation for each individual product on a monthly basis.

TABLE 4.
Chart of accounts of H. Blairon, 1926

00 Capital 01 Reserves 02 Provisions 03 Depreciation 04 Financial revenues 05 Financial expenses 06 Various profits 07 Various profits and losses 08 Monthly results 09 Annual results	40 Debtors 41 Creditors 42 Banks 43 Sales agents 44 Depositories 45 Securities payable 46 Taxes payable
10 Land 11 Buildings 12 Commercial equipment 13 Transport equipment 14 Goodwill 15 Formation expenses . . .	50 Exploitation expenses 59 Selling expenses
20 Cash 21 Postal cheques 22 Bank account 23 Securities receivable 24 Securities portfolio 25 Tax stamps	72 Allocation account for periodical expenses 73 Allocation account for depreciation
30 Warehouse	90 Sales

(Extension for industrial companies; Blairon details these accounts up to four digits)

50 General administration expenses
51 Administrative expenses
52 Social charges
59 Selling expenses
60 General industrial expenses
61 to 69 Industrial expenses for spectific production processes

70 Allocation of salaries
71 Allocation of transport expenses
72 Allocation of periodic expenses
73 Application of depreciation

80 Production expenses for specific products

Blairon was a strong supporter of formal monism:

> The industrialist does not have two distinctive accounting systems: one in which all operations with third parties are registered, and another that reflects the internal movements that follow from the production operations. All economic movements, whatever they are, are centralized in one unique accounting system; that is why it is necessary that, within this one accounting system, there is a perfect unification of both groups of operations; this unification is only possible if the part of the accounting chart that relates to the transactions with third parties is based on exactly the same principles as the part that relates to the industrial operations in their strict sense [1926, p. 9].

Blairon argued that both internal and external transactions should be included in one accounting system. A consequence of this was that there could only be one valuation basis, historical full cost. Historical full cost remained dominant in the Belgian accounting literature during the first half of the 20th century [see for example, Walravens, 1942; Lambert, s.d.; Leemans and Labar, 1949]. The general allocation bases for overhead costs were the number of units produced, the direct cost or the cost of direct labor or direct machine hours, or a mixture of these, depending on type of production and number of products. Blairon did not discuss standard costing in the first edition of his book in 1926. In 1944 and 1951 the textbook included the text of a lecture given by Blairon in 1936, in which he referred to Taylor, Gantt and Harrington Emerson and concluded that standard costing was useful for businesses that manufacture mass products in a continuous way and for those operating in service industries.

FROM BLAIRON TO THE 'UNIFICATION OF ACCOUNTING CODES'

The chart of accounts in the different editions of Blairon's work was widely used in Belgium [Berny, 1920; Bastin, 1944] and his textbook was highly acclaimed until the 1960s [NCAB, 1964]. Although there was no legal initiative with respect to accounting codes, there was probably de facto harmonization from the 1930s to the 1950s because of the widespread use of schemes based on the Société Générale rules and Blairon's proposals. Archival evidence for the coalmining industry shows that both systems were used concurrently [De Beelde, 1995].

The Blairon's scheme was brought to the fore in 1944 when the Belgian National Committee for Scientific Management (*Belgisch Nationaal Comité voor Wetenschappelijke Organisatie/ Comité National Belge de l'Organisation Scientifique*, abbreviated as BNCSM) presented a proposal for a national accounting code [BNCSM, 1946]. The BNCSM was created in 1926 to stimulate scientific management practices and the exchange of information and experience in this area. It had about 3000 members by the 1950s [Vlaemminck, 1956].

The BNCSM's proposal was prepared by a commission established in 1942. The formation of the commission was a response to a request by the Central Industrial Committee (the major industrial association) in August 1941 and interest at the Ministry of Economic Affairs where a similar committee was created on 4 September 1942. The BNCSM initiative was reportedly taken to prevent the occupying German forces from imposing the Goering Plan on Belgian industry [NCAB, 1964]. The main task of the BNCSM Commission was to propose a chart of accounts and a cost calculation method that would be applicable to the whole of Belgian industry. This aim was clearly ambitious. It was envisaged that over time the costing method to be developed would bring all Belgian concerns up to the level of the best managed companies.

The composition of the commission revealed the importance attached to its remit. Its members were either representatives of important companies and associations or were senior professionals [BNCSM, 1946]. The commission consisted of four accounting experts: H. Blairon, H. Delhove (the President of the Société Fiduciaire de Belgique), Ch. Hanon de Louvet (a professor and accountant) and P. Verleysen (Accountant and Secretary of the President of the Société Générale). Representatives of the bodies of professional accountants and bookkeepers were: J. Dumon (President of the Société Académique de Comptabilité de Belgique), P. Mahieux (Secretary of the Chambre des Experts Comptables et Comptables de Belgique), R. Mayer (President of one of the regional sections of the Société Royale Chambre belge des Comptables) and N. Paquet (President of another regional section of the S.R. Chambre belge des Comptables). Major industrial associations were represented by: M. Arendt (Director of the S.A. Electricité et Electromécanique), A. Bouton (Accountant of the Federation of the Belgian Chemical Industry), W. Dierickx (Head of the Department 'Prices' of the Central Committee of the Belgian Industry) and F. Parmentier (Director of the S.A. Usines Cotonnières de Belgique, the largest Belgian

textile manufacturer). H. Lepersonne and R. Caussin represented the BNCSM.

As a basis for its work, the commission used a chart of accounts "that had been used in a large number of companies since 1917" (a reference to the chart Blairon had developed - see Mommen, [1957]). This chart was changed in some respects, sent to the main Belgian industries for comment, and reconsidered. Finally, in 1944, a general chart of accounts and method of cost calculation was proposed. In 1946, a Dutch version of the code was published under the title 'Unification of Accounting Methods and Cost Calculation' [BNCSM, 1946].

The proposals of the BNCSM represent a clear example of the integration of financial and cost accounting. However, the focus was more on costing. In the introduction to the report reference was made to previous attempts to harmonize costing methods, including the work of its French counterpart, CEGOS (the Commission Générale d'Organisation Scientifique du Travail, created in 1929 [see Vlaemminck, 1956; Bouquin, 1997]). Reference was also made to general accounting charts used in certain industries (such as coal mining, metal working, electricity production). The report stressed the importance of introducing a general and scientifically based method of cost calculation. It also stated that cost calculation was a task for accounting rather than production departments. As indicated above, archival evidence for the coal industry shows that in a number of companies unit cost was calculated by production departments. The BNCSM commission's report suggested that the system adopted should consider the characteristics of Belgian industry and should not be too expensive to introduce.

The method of cost calculation proposed by the BNCSM was defined as 'production unit cost', excluding dividends or interest expenses. The whole process of cost calculation had to be integrated in a single accounting system incorporating financial reporting. Consequently, the unification of cost calculation methods would be linked to the accounting codes. The accounting code which resulted from the study of the commission included a series of accounts which were ordered in such a way that they followed the logical sequence of transactions. It was argued that these accounts should be found in the accounting codes of all Belgian companies, with the same names and in the same order. The accounts would be decimally classified, including account classes 0 to 5, 7 and 9, the classes 6 and 8 being reserved for industrial accounting. The basic code proposed by the Commission was two-digit, but the specification also

included a more detailed code at a three-digit level. Small and medium sized companies could use the two-digit code, but larger companies should use the full scheme and could extend and adapt it to their specific activities.

The following objectives of the accounting code were listed [BNCSM, 1946, pp. 17-18]: the periodic creation of reports with respect to rights and obligations of the company; the periodic calculation of sales and expenses relating to the accounting period; the periodic valuation of stock; the determination of production unit cost; the allocation of indirect costs; and the control of efficiency of production. The first two items were said to be part of all accounting systems, whereas the last four objectives were related to industrial accounting. Essential conditions for an effective industrial accounting system were perceived as a perpetual inventory system, an effective allocation of wages to products or orders, recording numbers of units produced, a rational allocation of expenses, a correct calculation of unit cost and a systematic comparison of cost of goods sold and sales for each product sold. Cost allocation tables were to be included in the accounting system and based only on data generated by this accounting system. Expenses should first be registered by type and then by center, identified by means of one or more digits to be added to the account number. The chart of accounts is shown in Table 5.

The chart of accounts proposed by the BNCSM commission allowed a monthly calculation of results and made standard costing possible by creating 'difference accounts' in class 7. Overall, the chart was very similar to that proposed by Blairon. In its comments on the chart, the commission said that the accounting chart was based on the "dynamics of the transactions: all movements find [in this chart] a logical sequence from the input of capital until the realization of exchange values" [BNCSM, 1946, p. 25]. Its logical structure was explained as follows. The creation of the capital of a company is the point of departure (account class 0). Before production starts the company has to invest in fixed assets (class 1). What remains is available to cover expenses necessary for production (class 2). This is followed by the acquisition of inventory, in order to start production (class 3). Purchases and sales lead to the creation of debtors and creditors (class 4). The production process will not only include expenses related to the acquisition of inventory, but after a short time also wages, maintenance, heating etc. These represent production expenses and the selling expenses (class 5). At the end of the process, goods produced will be sold and the

TABLE 5

Chart of Accounts, BNCSM, 1946

CLASS 0. EQUITY AND RESULTS 00 Capital 01 Reserves and provisions 02 Reserves 03 Depreciation 04 Financial revenue 05 Financial expenses 06 Various revenue 07 Various expenses 08 Monthly results 09 Annual results	CLASS 5. GENERAL AND SELLING EXPENSES 40 General expenses 41 Administrative expenses 52 to 58 Expenses regarding internal services 59 Selling expenses
CLASS 1. FIXED ASSETS 10 Land 11 Buildings 12 Installations: general and auxiliary 13 Installations: main activities 14 Equipment 15 Furniture 16 Transport equipment 17 New installations 18 Financial fixed assets 19 Intangibles	CLASS 6. PRODUCTION EXPENSES 60 Production expenses, general level 61 Production expenses, specific production processes
CLASS 2. AVAILABLE ASSETS 20 Cash 21 Postal account 22 Bank accounts 23 Stamps	CLASS 7. ALLOCATION ACCOUNTS 70 Allocation of salaries 71 Allocation of transportation expenses 72 Allocation of periodically paid expenses to each month 73 Allocation of depreciation expenses 74 Allocation of social charges
CLASS 3. REALIZABLE ASSETS Different types of inventory, one account for each type	CLASS 8. PRODUCTION ACCOUNTS For each type of product, specific accounts registering direct and allocation of indirect expenses
CLASS 4. DEBTORS AND CREDITORS 42 Debtors (trade) 43 Creditors (trade) 44 Various debtors 45 Various creditors 46 Shareholders and board members 47 Bond holders 48 Banks 49 Agents and representatives 50 Creditors to be paid 60 Participations	CLASS 9. SALES ACCOUNTS For each type of product, specific accounts registering sales

owner of the company will wish to measure performance (class 9, debited for expenses, credited for sales proceeds). Profits that are not distributed will increase the value of class 0, and the scheme starts again in the next accounting period. In this way the chart represents flows of resources through the company.

There are indications that the proposals of the BNCSM were accepted by at least one major Belgian industry. In a publication by three Belgian textile industries, the Belgian Association of Cotton Spinners (*Association Belge des Filateurs de Coton*), the Belgian Association of Weaving (*Association Belge de Tissage*) and the Union of Finishing Industries (*Union des Industries de l'Achèvement*), in 1946, a specific chart was proposed which was identical to the one presented in the BNCSM scheme [ABFC-ABT-UIA, 1946]. The focus of the textile manufacturers was on introducing a uniform method of unit cost calculation. This publication includes references to Belgian traditions, American practices, the work of Cégos in France and the suggestions published by the 'Syndicat Général de l'Industrie Cotonnière Française' in 1942. With respect to the accounting chart, the textile industries stated that: "the accounting chart corresponds to the one proposed by the BNCSM. That code has already been accepted by a large majority of the Belgian industrialists in such a way that, if a uniform chart would be imposed, it would probably be that chart" [ABFC-ABT-UIA, 1946, p. 16].

AN ALTERNATIVE APPROACH: THE ACCOUNTING CHART OF THE FLEMISH ASSOCIATION OF ENGINEERS

In 1944 there was also an initiative by the Flemish Association of Engineers. They published a chart of accounts, created by a commission called 'Unification of Accounting Methods' ("Eenmaking der Boekhoudmethodes"), part of a larger commission of scientific management ("Commissie voor Wetenschappelijke Bedrijfsleiding"), and the result of cooperation between the "Vlaamsche Ingenieursvereeniging" and the "Vlaamsche Accountantsvereeniging" [TIVI, 1944]. This commission consisted mainly of managers of industrial companies and the railways. The sub commission that developed the chart consisted of practicing accountants. The chart developed does not appear to have been successful [NCAB, 1964]. A partial and tentative explanation for this is that the document was prepared by Flemish associations in December 1943, during the German occupation [TIVI, 1944]. After the war, many Flemish organiza-

tions were considered to have collaborated with the Germans, and their initiatives were not supported in the post-war environment. However, the chart, which is shown in Table 6, is discussed here because it differed significantly from the charts referred to above.

The chart devised by the Flemish Association of Engineers used a decimal classification of accounts. It was admitted that this was not generally accepted in practice and that it would not automatically lead to improvements in practice. The authors doubted that harmonization would be possible for the registration of internal transactions (industrial accounting). Therefore, they directed their attempt to harmonize accounting practices to the commercial accounting subsystem. Consequently, a basic premise of the proposed chart was that it should be possible to organize the commercial accounting classes (classes 0 to 5) as independent from the industrial accounts (classes 6, 7 and 8). In this way the supporters of the plan considered it suited to commercial companies and small and medium sized enterprises. A further advantage was that such harmonization would ease the collection of national economic statistics. The order of the different accounts fitted with the structure of the balance sheet and was considered to improve the quality of the published statements.

The way in which the accounts were brought together in classes in this scheme differ significantly from the other charts discussed so far. All equity and liabilities accounts were included in one class. Contrary to what was considered normal practice by many accountants in the 1930s and early 1940s, depreciation was not listed among the equity accounts but subtracted from asset book value. A similar approach was used for provisions. Inventories were classified in the same class as long and short term debtors, securities and cash. This resulted in one working capital class (except for long term debtors). A very specific category was class 3. It included several 'correcting accounts', that is, depreciation and provisions. These two accounts registered the 'bookkeeping depreciation and provisions' (the depreciation and provisions determined by the management of the company at the end of the year). These amounts were not necessarily equal to the amounts that were included in the unit cost during the year. Each month, the latter were registered on the debit side of the appropriate account of class 4 via a credit entry on accounts 32-37.

TABLE 6

Chart of Accounts, Flemish Association of Engineers, 1944

CLASS 0. EQUITY AND DEBTS 00 Capital 01 Reserves 02 Long term debts 03 Commercial short term debts 04 Various creditors 05 Subsidiaries	CLASS 5. RESULTS 50 Sales 51 Cost differences 52 General costs 53 Financial profits 54 Various profits 55 Financial expenses 56 Various costs 57 Inventory adjustments 58 Monthly result 59 Annual result
CLASS 1. FIXED ASSETS 10 Land and buildings 11 Equipment and furniture 12 Transport equipment 13 Intangibles 14 Formation expenses 15 Assets under construction	CLASS 6. ALLOCATION OF COSTS 60 General costs 61 Selling expenses 62 Production expenses
CLASS 2. REALIZABLE AND AVAILABLE ASSETS 20 Inventories 21 Shareholders 22 Long term receivables 23 Commercial receivables 24 Various debtors 25 Securities 27 Cash 28 Bank accounts 29 Money transfers	CLASS 7. PRODUCTION 70 Product 1 71 Product 2 ... 79 Internal consumption
CLASS 3. CORRECTING AND INTERMEDIATE ACCOUNTS 30 Depreciation 31 Provisions 32 Wages payable 33 Periodic expenses to allocate 34 Allocated depreciation 35 Allocated provisions 36 Maintenance fund 37 Allocated expenses not to be paid 38 Off balance sheet accounts	CLASS 8. ALLOCATED EXPENSES 80 Department A 81 Department B ...
CLASS 4. EXPENSES BY NATURE 40 Wages 41 Salaries 42 Social expenses 43 Consumption of consumables 44 Consumption of water, gas, electricity 45 Maintenance 46 Depreciation 47 Taxes, insurance 48 Various expenses 49 Direct costs	

DISCUSSION AND CONCLUSIONS

Charts of accounts can be observed in most continental European countries. Currently, they have a statutory basis in nations such as France, Belgium, Greece, Portugal and Spain [Roberts, 1994]. During the period studied in this paper Belgium did not have a mandatory chart of accounts. All initiatives remained private and voluntary with industrial groups imposing the use of common codes in the companies that they controlled. The Anglo-Saxon literature generally is quite critical about the use of mandatory charts of accounts, stressing compromises of form over substance, a bias towards financial reporting and a mechanistic view of accounting. It appears that those who advocated the initiatives discussed above were aware of these risks and stressed that flexibility was an essential characteristic underlying the charts that they proposed. The charts developed by the Société Générale, the BNCSM and even the elaborate schemes of Blairon gave much attention to cost calculations, advancing what they considered best practice while at the same time stressing that adaptations to the specific characteristics of companies and industries might be necessary. The chart of the Flemish Association of Engineers attempted only to harmonize the structure of financial accounting charts, leaving maximum flexibility to companies with respect to industrial accounting subsystems. The focus on flexibility and on cost accounting might be a consequence of the nature of the bodies that developed these charts. Even though the specific commissions that worked out the charts might consist mainly of accountants, the larger commissions that supervised them generally consisted of managers and engineers and often focused on the introduction of scientific management rather than on the technicalities of accounting.

When compared with France, a country whose approach to accounting is generally quite close to Belgium, decimalized charts of accounts took a longer time to achieve practical application in Belgian industrial firms. This paper has linked the persistence of more traditional classifications of accounts in 'chapters' with the impact of the Société Générale de Belgique. The scheme that was developed by Godefroid in the 19th century continued to be further developed and was applied in a wide range of industries. It was gradually replaced by decimal classifications, of which the schemes developed by Hector Blairon were the most influential. The ideas of Otlet on the international harmonization of accounting, in which charts of

accounts could play a key role, seem to have gained less ground. This is probably a consequence of the context in which both Blairon and Otlet developed their ideas. Otlet's ideas on accounting seem to have been linked with a much broader objective, bringing order into knowledge of the world and developing an all-encompassing system. From this perspective, the interest of Otlet in accounting was logical, as accounting is a way of bringing order into the numerous transactions taking place in and between economic entities. However, Otlet's ultimate objective was probably distant from the day-to-day concerns of many businessmen and accountants who seem to have been struggling with more pressing issues such as the calculation of unit cost and the determination of the profitability of products. The framework advocated by Blairon was strongly oriented towards such concerns, and its focus on cost determination made it easier to link his proposals with work undertaken by various commissions in a context of attempts to encourage scientific management and the reconstruction of the Belgian economy after the Second World War.

The different charts that were advanced included quite detailed divisions for expenses. This was a consequence of their orientation toward industrial companies, and the importance attributed to cost calculations. Discussions of the charts in textbooks and the documents in which they were espoused, focused more on cost calculation than on balance sheet preparation. To some extent, this could be expected. Preparing a balance sheet from a sufficiently detailed chart of accounts is less difficult than the allocation of all types of expenses and the determination of the profitability of individual products, especially bearing in mind the dominance of historical full cost concepts. A further explanation might be found in the typical ownership structures of larger industrial companies in Belgium. Holding companies, of which the Société Générale was the most important, dominated. These companies received detailed information on technical aspects of production, sales, budgets and expenses. Often data were available on a monthly or even fortnightly basis. Trading of shares on stock exchanges by small investors was limited, and consequently, the role of the annual financial statements seems to have been less significant.

As stated above, most of the work on charts of accounts was explicitly linked with principles of scientific management. The introduction to the BNCSM commission's publication stated that finding a specific method of cost calculation "is part of the general measures that should introduce the principles of

scientific management and standardization in all areas of the economic activity" [BNCSM, 1946, p. 9]. The chart of the Flemish Association of Engineers was also the work of a commission on scientific management.

The focus on cost calculation also suggests a link with models in other countries, especially Germany. Schmalenbach [1961] contrasted his dynamic balance sheet with a static balance sheet. A dynamic balance sheet focuses on the presentation of the internal movements of resources in a company. The most important of these movements are those that have an impact on the financial results of the company. The focus of most of the schemes discussed above on tracing and allocating expenses is in line with Schmalenbach's emphasis on the dynamic aspects of accounting.

Most of the Belgian charts discussed in the paper were monistic, including all internal and external transactions and using the same basis of valuation for these transactions. This is in accord with the situation in major continental European countries during the first half of the 20th century. Schmalenbach's 1927 accounting chart, for example, also integrated cost accounting in the overall accounting system [Jouanique, 1990]. Durand [1992] states that one of the consequences of the French accounting chart of 1947 was that France moved to a strong separation between financial and cost accounting. Before 1947, the issue of whether industrial transactions should be included in the same system as that for constructing the financial statements was widely discussed, not only in France but also in the US and the UK. Durand links these debates with the scientific management movement and the role of accountants and engineers, two professional groups that frequently had different views on the relation between financial accounting and cost calculation. The same was observable in Belgium. In collieries, for example, cost calculations were performed by engineers involved in production, by accountants, or by both. This often led to different costings in different documents. Nevertheless, the dominant position in Belgium remained that cost calculation and financial reporting had to be included in one system. In 1946, the BNCSM stated: "As the fundamental basis for its work, the Commission has accepted the principle that the general accounting system should not only include exchange transactions with third parties, but also the internal movement of values used in the production process" [BNCSM, 1946, p. 16]. A harmonization of accounting charts was considered to be a prerequisite for the harmonization of costing methods. This is quite different

from developments in France. Only in the 1960s did Belgian accountants align themselves with developments elsewhere and accept the separation of financial and industrial accounting, referring explicitly to the French model [NCAB, 1964].

In conclusion, this paper has traced the development of accounting charts in Belgium from the late 19th to the middle of the 20th century. It explained the rather slow emergence of decimalized charts in Belgium as due to the dominant position of the Société Générale de Belgique and its method of structuring the accounts of companies under its control, a system imitated in many other industries and companies. Two tendencies appear to have led to the gradual replacement of the 'chapter' structure of charts of accounts by decimal classifications. These were firstly, the introduction of scientific management principles and related attempts to harmonize costing methods within monistic accounting systems; and secondly, the efforts of Otlet and La Fontaine to harmonize accounting internationally. The paper hypothesized that the relative isolation of Otlet explains why he was not successful in securing the implementation of his ideas, whereas the other stream of thought apparently had more impact due to its alignment with industrial and economic developments. However, these ideas on the harmonization of costing in Belgium were never enforced by the state. On the contrary, during the 1960s attempts to harmonize accounting increasingly focused on the balance sheet and the registration of expenses by nature, eventually leading to the three digit statutory accounting chart, imposed under the Royal Decree of 12 September 1983.

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